IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

LG. PHILIPS LCD CO , LTD.,	)	
	)	
Plaintiff,	)	C.A. No. 05-292 (JJF)
	)	
v	)	
	)	
TATUNG COMPANY;	)	
TATUNG COMPANY OF AMERICA, INC.;	)	
CHUNGHWA PICTURE TUBES, LTD ;	)	
AND VIEWSONIC CORPORATION,	)	
	)	
Defendants.	)	

DECLARATION OF DAVID MICHAEL HOLMES IN SUPPORT OF DEFENDANTS' OPENING BRIEF OF THEIR PROPOSED CLAIM CONSTRUCTIONS

DECLARATION OF DAVID MICHAEL HOLMES

I, David Michael Holmes, declare under penalty of perjury as follows:

1 I have personal knowledge of the facts stated in this declaration, and if called as a witness, I could competently testify to those facts. I make this declaration in support of Defendants' opening claim construction brief.

2 I am a resident of the state of Texas, and I reside at 4700 Hunington Drive, Bryan, Texas.

I. Qualifications and Credentials

3. I received a Bachelor of Science degree in Electrical Engineering from Texas A&M University in 1977. In addition, I received a Masters degree in Business Administration (MBA) from Texas A&M University in 1992. My curriculum vitae is attached to this Declaration as Exhibit A.

4. During my professional career of 30 years, I have worked in the consumer, commercial and industrial electronics field, with particular emphasis on product design and development for commercialization. Presently, I am President and owner of *Holmes Development*, which I founded in 1992. *Holmes Development* provides engineering consulting services including electronic and mechanical hardware design, software development and expert consulting services. Specific areas of my expertise and experience include video display devices and associated electronic control systems.

5. In addition to my work at *Holmes Development*, I served as Vice President of Engineering for *Texas Digital Systems, Inc* , a company that designs, manufactures and sells visual communications systems based upon LCD, LED and plasma display technology. My responsibilities included the management of all engineering aspects of display product development as well as the manufacturing operations of these products. I was also responsible for the evaluation and selection of all display devices that were incorporated into the products. In the engineering role, I pioneered several LCD system

design concepts that were incorporated into outdoor, sunlight readable LCD display systems. These design concepts were implemented into over 17,000 outdoor LCD systems that were sold for commercial applications worldwide. It was also my responsibility to insure product quality control where I was chiefly responsible for the identification and resolution of quality problems for the LCD and other display technologies employed, which included all failure modes of liquid crystal displays. In that role, I was intimately involved with problem resolution related to TAB and TCP bonding issues caused by mechanical and thermal stress. I worked closely with the LCD manufacturers and their field applications engineers to jointly develop resolutions to these problems. I was also responsible for selecting and qualifying LCD re-work companies for the repair and replacement of damaged TCPs. During the latter part of my ten year tenure at *Texas Digital*, I was promoted to the position of Chief Technology Officer.

6. Prior to my work at *Texas Digital Systems, Inc.*, I worked for 12 years at *O.I. Corporation* (formerly *Oceanography International*) where I was in charge of the hardware and software design aspects of all new product development. *O.I. Corporation* was involved in several different product lines, including oilfield electronic instrumentation, down-hole well logging equipment and analytical laboratory instrumentation used for environmental analysis of water, air and soil samples. In this position, I was responsible for the design of products, many of which used a variety of electronic LCD display systems and devices.

7. As a result of my background, experience, knowledge and education, I am regarded as an expert in the field of display technology, particularly in the area of LCD flat panel display systems design and applications. Therefore, I have been asked to review and analyze U.S. Patent No. 6,738,121 ("the '121 patent") (Ex. 7)[1], including all claims. In addition to analyzing the '121 patent, I have further reviewed the '121 patent's prosecution history. I have personal knowledge I and am familiar with the technology

[1] The Exhibits referenced to this Declaration are found in CPT's Exhibits in Support of Defendants' Opening Brief in Support of Their Proposed Claim Constructions

claimed by the '121 patent. I have also reviewed the proposed claim constructions provided by counsel of Plaintiff.

II. Background Technology and Prior Art TCPs

8. The '121 patent is directed toward the design of a "tape carrier package" (TCP) and to liquid crystal displays (LCDs) that incorporate said tape carrier package. The TCP is one of several major components that comprise an LCD assembly, and its primary function is to provide electrical interconnection between a printed circuit board and the actual LCD glass panel (liquid crystal panel). The '121 patent relates to an alleged improvement in the design of the TCPs that the patent claims reduces screen brightness variations in certain areas of the LCD display.

9. LCDs are used in virtually all laptop computers and flat screen computer monitors. There are many sizes and types of LCDs available today, but the '121 patent primarily applies to "Active Matrix TFT" color LCDs, which is the type most often used in laptop and computer monitor applications. In the following descriptions, the term LCD refers to active matrix TFT color LCDs.

10. There are several major components that make up a typical LCD module:

- Liquid crystal panel – This is the glass "sandwich" assembly consisting of an upper and lower glass substrate, which contains the liquid crystal material and the internal connections to each pixel. The liquid crystal panel is the part of the display that is visible when looking at a laptop screen or LCD computer monitor. (There are other components that exist in the liquid crystal panel, but their discussion is beyond the scope of this description.)
- Backlight – The backlight is a uniform light source that is positioned behind the liquid crystal panel. The light that is produced by this light source is then selectively passed through the pixel(s) of the liquid crystal panel.

- Printed Circuit Board (PCB) – This is a printed circuit board that generates control signals for the proper activation of the pixels.
- Tape carrier package (TCP) – The TCP is a flexible interconnection component, made of a base film, adhesive and metal layer that provides electrical connection between the PCB and the edge of the lower glass substrate of the liquid crystal panel.

11. Several LCD design variations have evolved since the first introduction of the active matrix TFT LCD. In the earlier implementations, the PCBs were positioned around the outside edge of the liquid crystal panel, and this configuration produced a wide "picture frame" area around the outside edges of the screen viewing area. In this implementation, simple flexible printed circuit flat cables were typically used to connect these PCBs to the liquid crystal panel.

12. As screen sizes increased, it became desirable to reduce this "picture frame" or border around the screen so that the LCD could be packaged in a more compact fashion, primarily for laptop display applications. This was accomplished by relocating the PCB behind the liquid crystal panel and backlight, but this required a longer flexible interconnection that could be bent into a horseshoe or "U" shape. The TCP was developed to perform this flexible interconnection function, and thus the amount of "wasted space" around the perimeter of the liquid crystal panel was significantly reduced.

13. In its simplest implementation, the TCP is a flexible flat cable that is comprised of a tape-form base film layer, an adhesive layer and a metal layer upon which electrical conductors are formed. The base film layer provides the primary flexible supporting structure of the TCP. The complete TCP also includes a driver integrated circuit (D-IC) which receives input control signals from the PCB and transmits output drive signals to the liquid crystal panel. The D-IC is attached to the TCP and is electrically connected to the conductors on the metal layer. The TCP has an "input pad" with electrical connections that attach to the PCB, and it has an "output pad" with

electrical connections that attach to the lower glass substrate of the liquid crystal panel. The input pads and the output pads of TCP are typically attached to the PCB and liquid crystal panel using a thermal-pressure bonding process in conjunction with the application of an anisotropic conductive film or adhesive at the point of attachment.

14. Early implementations of the TCP used a continuous strip of the base film material. While the base film is typically a flexible polyimide tape material, it is still too rigid to be bent into a tight "U" shape, without increasing the risk of damaging the fragile pad connections. Early enhancements to the TCP design included removing a strip of the base film material in line with the desired bending point. This created increased flexibility in the section of the TCP where the part was intended to be bent. In the '121 patent, this particular section where the base film is removed is referred to as the "bending part" of the TCP. There may be one or more bending parts on a TCP depending on the number of bends required for a particular LCD design. The use of the bending parts on the TCP allowed the development of more compact designs while at the same time reduced the stress that the TCP exerts upon the bonding area of the input and output pads

15. As the design of LCD displays continued to evolve, it was determined that there were certain reliability issues with maintaining the integrity of the connection of the TCP output pad and input pad to the lower glass substrate and PCB, respectively. This connection point was subject to failure due to certain mechanical "peeling forces" and thermal stresses that were being applied during assembly and/or operation of the LCD. To counter this problem, one or more additional base film material strips were removed from an area close to the input and/or output pads where the TCP is <u>not bent</u>. By removing the base film here, an additional area is created close to the pads that is flexible, which reduces the mechanical and thermal stresses exerted on the pad bonding area, both during and after assembly.

16. It was known in the art around 1999-2000 that removing the base film in this non-bending area of the TCP provided several benefits. The two primary benefits were:

- Reduction of thermal stress – Because the removal of base film in this non-bending area provides additional flexibility to the TCP, stresses that would be generated by different rates of thermal expansion of the various LCD components are reduced. (Ex. 9)
- Reduction of peeling stress – During assembly of the LCD display, certain bending and folding of the TCP is required The removal of base film in this non-bending area provides a flexible joint near the pad bonding area, thus reducing the tendency to peel the TCP loose from the lower glass substrate of the LCD or the attached PCB during handling and assembly.

III. The '121 Patent

17. The '121 patent is directed toward the design of an alleged improved TCP and to LCDs that incorporate that tape carrier package. The inventor states that there exists a problem with screen brightness variations along the edge of the liquid crystal glass close to the areas where the TCP is bonded to the lower glass substrate. The inventors state that these brightness variations are the result of thermal stresses that are exerted upon the lower glass substrate due to thermal expansion and contraction forces that occur during the TCP bonding process to the glass (Ex. 7, 2:30-55).

18. The '121 patent states that it solves this problem by including a "dummy bending part," which based on the '121 patent's specification and prosecution history, refers to the area on the TCP where a portion of base film is removed between either the input or output pad part and the D-IC where the TCP is not folded.

19. The "dummy bending part" is structurally similar to the removed portions of base film on TCPs used in prior art LCD modules, where, as discussed above, the base film was removed in positions close to the pad parts in areas where the TCP is not folded to improve peel resistance and reduce thermal stresses

IV. Disputed Claim Language

20. I understand that claim language constructions are formulated from the perspective of one of ordinary skill in the art at the time the patent application was filed. I understand that the ordinary meaning of the claim limitations is the preferred construction unless the intrinsic evidence found in the specification and prosecution history dictates non-standard particular interpretation or construction. I understand if I am unable to determine the meaning of a particular claim after assessing the intrinsic evidence, I may look to extrinsic evidence to help resolve any lack of clarity

21. I have read the '121 patent, its prosecution history and the parties' contentions regarding claim construction from the standpoint of one of ordinary skill in the art in 2000. My opinion regarding the pertinent technology as it would have been understood in the art is consistent with CPT's following contentions regarding the meaning of claim terms at issue in the '121 patent.

22. The following paragraphs set forth the disputed claim terms, my opinion as to what one of ordinary skill in the art would construe the disputed claim terms to mean and the intrinsic support I found in the patent and its prosecution history for that opinion

Claim Term	CPT's Construction	LPL's Construction
Tape carrier package	An assembly, used to connect the driving integrated circuit (D-IC) to the liquid crystal display (LCD) and the printed circuit board (PCB), having a base film, adhesive layer and metal layer.	An apparatus to connect an integrated circuit chip to the liquid crystal panel and a printed circuit board.

23 CPT's construction of "tape carrier package" is consistent with the '121 specification, and the ordinary meaning of "tape carrier package." In 2000, a "tape carrier package" in the context of LCD construction would have a plain and ordinary meaning to one of ordinary skill in the art of: an assembly used to connect the driving integrated circuit (D-IC) to the liquid crystal display (LCD) and the printed circuit board (PCB), with the TCP having a base film, adhesive layer and metal layer.

24 The difference between the parties' construction for this term, is that the LPL's construction does not limit a TCP to a TCP. Under LPL's construction, any apparatus that connects an integrated circuit chip to the liquid crystal panel and the PCB would be considered a TCP. This is not correct. A TCP is one of several different methods for connecting an integrated chip to the liquid crystal panel and the PCB, and the TCP consists of a base film, an adhesive and a metal layer. Other connection methods, which were known to those of ordinary skill in the art at the time the '121 patent application was filed, include, chip on board (COB), chip on film (COF), and chip on glass (COG).

25. TCP is a specific connection method and one of ordinary skill in the art, upon reading the '121 patent, would understand that the invention was directed to TCPs and not to any of the other various connection methods.

26. The '121 patent confirms that the ordinary meaning of TCP is intended to be used and specifically states, for example, that the TCP consists of a base film, an adhesive and a metal layer. ("As shown in Fig 2 and Fig.3, an adhesive is coated on a base film of the TCP, and a lead part is adhered thereon. The lead part, made from copper (Cu), is connected to pins of the D-IC." (Ex. 7, 2:5-8)). In describing its invention, the '121 patent specification further states "output pins of the D-IC are connected to a lead part adhered onto the base film by means of an adhesive." (Ex. 7, 5:7-9).

Claim Term	Defendants' Construction	Plaintiff's Construction
Output pad part	Area of the tape carrier package (TCP) that connects to the pads formed on the edge of the lower glass substrate of the LCD	An interface between the integrated circuit chip and the liquid crystal panel.

27 In 1999-2000, one of ordinary skill in the art upon reading the '121 patent and its prosecution history would have understood that the term "output pad part" to refer to the area of the tape carrier package (TCP) that connects to the pads formed on the edge of the lower glass substrate of the LCD.

28. The output pad part are pads formed on the tape carrier package which are used to connect the driving integrated circuit to the lower glass substrate of the liquid crystal panel. According to the '121 patent, the output pad part is located in the area at one end of the TCP base film where the TCP is attached to the lower glass substrate of the liquid crystal panel. Specifically, the specification states that "At the upper end and lower end of the base film, an input pad part and an output pad part extending from each lead of the lead part are provided The input pad part is connected to an output signal wiring of the PCB while the output pad part is connected to the gate line or the data line formed on a lower glass substrate" (Ex 7, 2:9-15). In discussing the invention, the specification further states that "the output pads [are] adhered onto the glass substrate of the liquid crystal panel" (Ex. 7, 6:9-10) "At the output pad part are provided pads extending from the lead part to be connected to the pads formed at the edge of the lower glass substrate." (Ex 7, 5:17-22 and 5:44-50).

29 I have reviewed LPL's proposed construction and do not agree with it. The term "interface" is broad and indefinite, and it could include parts other than the area defined by the '121 patent as the output pad part. The specification clearly states that the output pad part is at the end of the base film and is connected to the lower glass substrate (Ex. 7, 2:9-15; 6:9-10). This is further confirmed by reference to the figures, including

figure 9, which shows the output pad part at the end of the tape carrier package in the location where the TCP would be adhered to the lower glass substrate of the liquid crystal panel (*See* element 42, Fig. 9 of the '121 patent, Ex. 7).

Claim Term	**CPT's Construction**	**LPL's Construction**
Input pad part	Area of the TCP that is connected to the output signal wiring of a printed circuit board.	An interface between the integrated circuit chip and the printed circuit board.

30. In 1999-2000, one of ordinary skill in the art upon reading the '121 patent and its prosecution history would have understood that the term "input pad part" to refer to the area of the tape carrier package (TCP) that is connected to the output signal wiring of a printed circuit board.

31. This meaning is consistent with the '121 specification. The input pad part are pads formed on the tape carrier package which are used to connect the driving integrated circuit to the printed circuit board. (Ex. 7, 5:11-13, 38-40, and 65-67). According to the '121 patent, the input pad part is located in the area at one end of the TCP base film where the TCP is attached to the printed circuit board. Specifically, the specification states that "At the upper end and lower end of the base film, an input pad part and an output pad part extending from each lead of the lead part are provided. The input pad part is connected to an output signal wiring of the PCB" (Ex. 7, 2:9-15). In discussing the invention, the specification further states that "At the input pad part are formed pads extending from the lead part to be connected to an output signal wiring of a PCB" (Ex. 7, 5:11-13).

32. I have reviewed LPL's proposed construction and do not agree with it. The term "interface" is broad and indefinite, and it could include parts other than the area defined by the '121 patent as the input pad part. The specification clearly states that the

input pad part is at the end of the base film and is connected to the printed circuit board. (Ex. 7, 2:9-15; 5:11-13). This is further confirmed by reference to the figures, including Fig. 9, which shows the input pad part at the end of the tape carrier package in the location where the TCP would be adhered to the printed circuit board. (*See* element 41, Fig 9 of the '121 patent, Ex. 7).

Claim Term	**CPT's Construction**	**LPL's Construction**
Dummy bending part	Area on the TCP where a portion of the base film is removed between either the input or output pad part and the D-IC where the tape carrier package is not folded	A bendable part of the tape carrier package where the base film is removed, which has a function other than bending.

33. To my knowledge, the phrase "dummy bending part" used in the '121 patent was not in and of itself an ordinary term or a term of art in 1999-2000. The term "dummy" in front of "bending part" implies that it is a "bending part" that does not bend, and is, therefore, a "dummy bending part." After reviewing the patent and its prosecution history, I agree with CPT that a "dummy bending part" should be construed to mean an area on the TCP where a portion of base film is removed between either the input or output pad part and the D-IC where the TCP is not folded.

34. The specification and prosecution history support CPT's proposed construction. The specification consistently defines the dummy bending part as being formed by removing the base film between the pad part and the D-IC chip:

- "A dummy bending part is formed *by removing the base film between the pad part and the integrated circuit chip*" (Abstract, Ex. 7)

- a dummy bending part . . . *by removing base film between the pad part and the integrated circuit chip*." (Ex. 7, 3:46-49)

- *Between the output pad part and the D-IC* are provided one or two dummy bending parts *in which the base film is removed*." (Ex. 7, 6:2-5)

35. Aside from the name itself, the prosecution history further supports construing "dummy bending part" to exist where the TCP is not folded. During prosecution, the '121 patent was initially rejected by the Examiner in light of certain prior art, including a patent to Tagusa et al. (U.S. Patent 5,668,700) and Tajima, (U.S. Patent 5,398,128). In response, the '121 patent applicants distinguished their invention on numerous occasions on the basis of the dummy bending part existing at an area where the TCP is not folded. For example,

> Claim 1 is allowable over the cited references in that this claim recites a combination of elements including, for example, wherein the dummy bending part is formed at a position, close to any one of the output pad part or the input pad part, **where the tape carrier package is not folded**. None of the cited references including Tajima and Tagusa, singly or in combination, discloses, teaches or suggest at least this feature of the claimed invention
>
> (March 24, 2003 Reply to Office Action, p. 11, Ex. 11)

36 The representations made during prosecution history would confirm to one skilled in the art that the dummy bending part must be in a position where the TCP is not folded.

37. LPL's proposed construction of "dummy bending part" is "a bendable part of the tape carrier package where the base film is removed, which has a function other than bending." I do not agree with LPL's construction. LPL's construction is overbroad and does not exclude a bending part from being a dummy bending part. Under LPL's construction, so long as a bending part has an additional function, other than bending, it would be included within the scope of the claim. Further, LPL's construction is at odds with the arguments made during prosecution that the dummy bending part is located on the TCP where the TCP is not folded.

38 LPL's construction of this term is also inadequate in that it does not provide any information related to the required location of the dummy bending part. Under LPL's construction the dummy bending part can be located anywhere on the TCP. LPL's construction, therefore, is contrary to the specification and prosecution history, as discussed above.

Claim Term	**CPT's Construction**	**LPL's Construction**
Bending part	Area of the TCP where a portion of the base film is removed where the TCP is to be folded.	A bendable part of the tape carrier package where the base film is removed.

39. In 1999-2000, one of ordinary skill in the art upon reading the '121 patent and its prosecution history would have understood that the term "bending part" to refer to the area of the tape carrier package where a portion of base film is removed where the tape carrier package is to be folded. This understanding is also in accord with the ordinary meaning of this term.

40. Based on LPL's proposed construction, the parties appear to agree that a bending part is an area of the TCP where the base film is removed. LPL, however, contends that the bending part does not have to actually be for folding or bending, and therefore disagrees with CPT's proposed construction on that basis. However, it is readily apparent that CPT's proposed construction adopts the plain meaning of the claim term "bending part" and is consistent with its use in the patent.

41. The specification consistently teaches that the base film is removed at the bending parts to allow the TCP to easily fold:

"at least one bending part in which the base film at a portion where the tape carrier package is folded is removed" (Ex. 7, 3:54-56)

- "at least one bending part in which the base film at a portion where the tape carrier package is folded is removed" (Ex. 7, 3:66-4:12)

- "Between the input pad part and the D-IC is provided the first bending part in which the base film is removed. The TCP between the PCB and the D-IC is easily bent by the first bending part." (Ex 7, 5:13-17 and 40-44)

- "Between the output pad part and the D-IC is provided the second bending part and the dummy bending part in which the base film is removed. The TCP between the liquid crystal panel and the D-IC is easily bent by the second bending part. (Ex 7, 5:20-24 and 5:47-52)

42. The prosecution history of the '121 patent further supports Defendants' construction of "bending part." For example, the '121 patent applicants described the bending parts in a prior art patent as being "folded."

Claim Term	CPT's Construction	LPL's Construction
Bent position	Location on the TCP where the TCP is folded.	Position that is not flat.

43. A bent position is the term used by the '121 patent to describe the tape carrier package where the bending parts are located and therefore, where the tape is folded to allow the PCB to be placed on the rear-side of the LCD panel. This claim language is used in only the claims. For example, Claim 1 recites:

- "a first bending part in which a second portion of the base film existing at a bent position . . . is removed"

44. LPL's construction for this term is a "position that is not flat." LPL's definition is overly broad and not supported by the specification and prosecution history. One skilled in the art upon reviewing the specification and figures of the patent would understand that "bent position" describes the TCP where folded at the "bending parts." Under LPL's proposed construction, the "bent position" could refer to any area on the TCP, including areas of the TCP that may be only slightly bent, rather than folded, as described in the patent and figures. The bending position described in the '121 patent is bending to such a degree so as to allow the PCB to be placed to the rear-side of the LCD.

45. Therefore, it is my opinion that one of ordinary skill in the art, upon reading the '121 patent and its prosecution history, would understand the term "bent position" to mean the location on the TCP where the TCP is folded.

Claim Term	CPT's Construction	LPL's Construction
Not folded	Substantially flat area of the TCP.	Not making a fold

46 The claim language "not folded" is used in the specification and claims to describe the location of the "dummy bending part," as a location where the TCP is "not folded," *i.e.*, not in a "bent position" at a "bending part." (Ex 7, 3:57-59, Claims 1, 5 and 14).

47 According to the '121 patent, the dummy bending part is located on the TCP between the pad parts and a bending part. (See, e.g., Figs., 9 and 11, Ex. 7) One of ordinary skill in the art would immediately recognize that this area is substantially flat.

Claim Term	CPT's Construction	LPL's Construction
On the pad part	On top of the output pad part.	At or along, or in proximity to, the pad part.

48. One of ordinary skill in the art would have understood that the term "on the pad part" would have its ordinary meaning in that it refers to a location on top of the output pad part. CPT's construction of this claim term is consistent with the ordinary meaning and the intrinsic record.

49. "On the pad part" appears in only claim 15. Claim 15 requires the dummy bending part be "positioned on the pad part." In reviewing the claim language it is clear that the "pad part" referred to in Claim 15 is the "output pad part," and not the "input pad part."

50. Claim 15 depends from Claim 14 and Claim 14 defines the pad part, as "extending from the integrated circuit chip to be connected to the liquid crystal panel"

51. The specification is clear that the "output pads are adhered onto the glass substrate of the liquid crystal panel" (Ex. 7, 6:9-10). Therefore, the pad part identified in Claim 14, as being connected to the LCD panel, must refer to the "output pad part."

52. In all claims except claim 15, the dummy bending part is required to be "close to" the pad part. In claim 15, the dummy bending part is required to be "on" the pad part. One skilled in the art would view these two terms as having different meanings.

53. I understand LPL proposes that the term "on the pad part" means at or along, or in proximity to the pad part. Under this construction "close to" and "on" would mean the same thing.

54. Further, one skilled in the art would not have construed the term as proposed by LPL to have the vague meaning of "at or along, or in proximity to, the pad part". Simply having "proximity to" clearly does not fall with the ordinary meaning of "on" in this context. Therefore, it is my opinion that one of ordinary skill in the art would understand "on the pad part" to mean "on top of the output pad part."

Claim Term	**CPT's Construction**	**LPL's Construction**
Reducing a thermal expansion force and a thermal contraction force generated when thermal pressing the output pad part on to the liquid crystal panel.	This claim phrase is indefinite. If the court determines that this claim phrase can be construed, it should be construed as: A reduction of a thermal expansion force and a thermal contraction force generated when thermal pressing the output pad part of the TCP onto the liquid crystal panel.	Reducing the thermal expansion and contraction forces that result from thermal pressing the tape carrier package to the liquid crystal panel.

55. I find no information or data in the '121 patent to suggest what amount of reduction of a thermal expansion or contraction force is necessary to achieve the desired result. Further, the '121 patent does not describe how to make any direct measurement of any reduction of a thermal contraction force or a thermal expansion force.

56. From the complete lack of support in the specification, one of ordinary skill in the art would not know how to determine if a dummy bending part is functioning as required in the claims.

57. CPT's proposed alternate construction somewhat clarifies this claim phrase, so that one of ordinary skill in the art can understand what is being claimed. However, it still would not enable one to measure the amount of reduction, if any.

Claim Term	**CPT's Construction**	**LPL's Construction**
Distributing a stress applied to the liquid crystal panel according to a thermal expansion of the pad part	This claim phrase is indefinite. If the court determines that this claim phrase can be construed, it should be construed as: Distributing a stress applied to the liquid crystal panel that results from the thermal pressing of the output pad part of the TCP on to the liquid crystal panel.	Distributing a stress applied to the liquid crystal panel that results from the thermal pressing of the output pad part on to the liquid crystal panel.

58 As currently drafted, this claim phrase is not readily understood. One of ordinary skill in the art would not know what "distributing a stress . . according to a thermal expansion of the pad part" means. Therefore, one of ordinary skill in the art would not know how to determine the scope of this claim.

59. Further, nothing in the patent identifies how to calculate or determine the distribution of stresses that result from the thermal expansion of the pad part.

60. From the complete lack of support in the specification, one of ordinary skill in the art would not be able to determine if a dummy bending part is functioning as required in the claims.

61. CPT's proposed construction somewhat clarifies this claim phrase, so that one of ordinary skill in the art can understand what is being claimed. However, it still would not enable one to measure the amount of reduction, if any

Claim Term	CPT's Construction	LPL's Construction
Thereby reducing a thermal expansion force and a thermal contraction force of the base film parallel to a longitudinal direction of the integrated circuit chip.	If the court determines that this claim phrase can be construed, it should be construed as: A reduction of a thermal expansion force and a thermal contraction force of the base film parallel to a longitudinal direction of the integrated circuit chip.	Reducing the thermal expansion and contraction forces of the base film parallel to a longitudinal direction of the integrated circuit chip that result from thermal pressing the tape carrier package to the liquid crystal panel.

62. The patent provides no data to support or guidance to determine whether a dummy bending part is reducing a thermal expansion force that is parallel to the integrated chip. For these reasons, one of ordinary skill in the art would not be able to determine if a dummy bending part is functioning as required in the claims.

Claim Term	CPT's Construction	LPL's Construction
Pad part extending from the integrated circuit chip.	The pads located at the ends of the TCP which are electrically connected to the integrated circuit chip.	An interface electrically connected to the integrated circuit chip.

63. This claim phrase is found in claims 1, 2, and 14. CPT's construction of this claim phrase is consistent with the specification of the '121 patent, which states that the pad parts are located at the ends of the base film where the TCP is connected to the lower glass substrate of the liquid crystal panel (output pad part) and the printed circuit board (input pad part) (Ex. 7, 2:9-15; 5:11-12, 17-19).

64. The pad parts are electrically connected to the integrated circuit chip. With respect to the input pad part, the specification states that the "The TCP includes a D-IC . . . Output pins of the D-IC are connected to a lead part adhered onto the base film by means of an adhesive. . . . At the input pad part are formed pads extending from the lead part to be connected to output signal wiring of a PCB" (Ex. 7, 5:1-13)

65. With respect to the output pad part, the specification states that the "The TCP includes a D-IC. . . . Output pins of the D-IC are connected to a lead part adhered onto the base film by means of an adhesive. . . . At the output pad part are provided pads extending from the lead part to be connected to the pads formed at the edge of the lower glass substrate." (Ex. 7, 5:1-20)

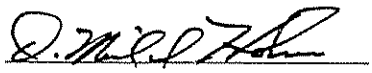
66. One of ordinary skill in the art would not construe this claim term as proposed by LPL because the proposed interpretation states that the output pad part is "an interface between the integrated circuit chip and the liquid crystal panel." The term "interface" is broad and indefinite, and it could include parts other than the defined output or input pad area.

V. Conclusion

67. As discussed in detail above, upon completion of my review of the '121 patent and the '121 patent prosecution history, it is my opinion that the claim terms in the '121 patent should be interpreted consistently with the proposed constructions by CPT as set forth in Exhibit 8 attached to Defendants' Opening Brief of Their Proposed Claim constructions.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 8th day of March, 2006 in Chicago, Illinois.

By 

David Michael Holmes